

Utilization of Fruit and Vegetables for Processing Dodol

Sukarsih Andi Pangki
Universitas Negeri Makassar, Indonesia

Email: karsihpkk@gmail.com

Abstract

The problem in this research were (1) How does the process of making dodol overview of fruits and vegetables , and (2) How the panelists acceptance of the product dodol fruits and vegetables. This experimental study aims to determine the process of making dodol of fruits and vegetables and to know panelist acceptance of the product dodol fruits and vegetables. Preparation process of dodol through several stages, from preparation of materials and equipment , cleaning , stripping the skin , cutting , weighing, crushing / refining of meat fruit and vegetables , specifically for pumpkins and squashes carried steaming before the stage of refining the meat , then do the cooking dodol dough with the addition of sugar and other ingredients or the recipe to get the dough dodol dull. The next stage is the process of cooling and cutting according to taste and the last is the packaging process. The results of organoleptic analysis of the level of dodol A panelist on fruits and vegetables that were made showed that the aroma evaluation aspects in general panelists liked the product with code F2, F4 , F6 , F8 , F9 , and F10. Aspects of color vote, the panelists were as many as 15 people preferred product code F2 , F4 , F6 , F8 , F9 , and F10 . Aspects of assessment texture throughout the panelists preferred the product code F2 , F4 , F6 , F8 , F9 , while the assessment of taste panelists preferred the product F2 , F4 , F6 , F8 , F9 , and F10 compared to the product code F1, F3, F5, F7, and F10 . The description proves that the formula recipe 25 % meat substitution fruit vegetable san preferably , except in papaya dodol 50 % substitution is preferred by panelist . The results of this research is to produce a standard prescription formula of making dodol by utilizing pumpkin, squash, papaya , mango and pineapple as a base material substitution dodol.

Keywords : *Dodol , Fruits and Vegetables*

Introduction

Indonesia is an agricultural country rich in natural resources and has a good variety of diverse ethnicity, religion, race and customs and culture. One aspect of culture is a traditional food habits. Traditional foods are the types of foods are best suited to local conditions as well as a daily diet of the local society. So it can be expected so many variations of traditional foods. However, information about the diversity of traditional foods that are in Indonesia is still very limited.

Traditional foods is a resource that should be developed and utilized. Traditional foods need to be developed in the form of small and medium industries. So it needs special attention from the government and private individual. The food and the traditional cake has an idea of a daily diet in the form of staple food, snack or special offerings are hereditary. Traditional food commonly consumed by ethnic group and the specific area, and cultivated for generations (Marwati, 2000: 113).

The development of consumption patterns in particular food derived from fruits and vegetables is a new challenge to improve production and product quality. To answer this challenge is to create an innovation foods that are easy to make, loved all people and the most important is to have a high nutritional value. One product that can be done is to make food by using basic ingredients of fruits and vegetables.

A variety of food and traditional pastries are scattered throughout Indonesia, especially South Sulawesi region still needs to be developed. Traditional cakes commonly known as "*barongko, pisang eppe, pisang ijo, sanggara Balanda, biji nangka, dodoro*", etc. Dodol cake is one of the traditional cake, which was known by the people of Indonesia is no exception communities in South Sulawesi.

Dodol is the most popular traditional food in several regions in Indonesia. Dodol classified into two, namely dodol prepared from fruits and dodol prepared from starchy foods, such as rice flour and glutinous rice flour. Dodol pieces of flesh of ripe fruit and crushed or mashed, then cooked with the addition of sugar and other food additive or without the addition of groceries. In accordance with the definition, then in making dodol fruits allowed the addition of other materials, such as glutinous rice flour, tapioca starch, flour hunkue, dyes, or preservatives.

In Indonesia, especially in Makassar dodol made from fruits and vegetables have not been recognized by the majority of society and also dodol far only made of glutinous rice flour only, based on these conditions, researchers will make dodol variety of basic ingredients of fruits and vegetables.

Research Methods

This research is experiment was conducted in a Cookery laboratory PKK Faculty of Engineering, University of Makassar. Fruits and vegetables that are used in

making dodol is mango, pineapple, papaya, pumpkin. Selection of fruits and vegetables is the reason that fruits and vegetables are readily available, affordable and have meat that is easily processed into dodol.

As for the execution procedures in this research consists of the preparation phase and the implementation phase, as follows:

Preparation

Preparations for the implementation of the research are: a) Preparation of materials; b) Preparation of tools used in the processing, among others; knife, spatula, frying pans, scales, steamer, cutting board and blender; c) Preparation of research instruments in the form of sheets for quality assessment test of Organoleptic preference for products made.

Implementation

The type of activities carried out in this research are: a) Dodol perform processing by utilizing the flesh of the fruit mango, pineapple, papaya and vegetable pumpkin, squash as a base material dodol; b) Implement Organoleptic test to the product produced. Panelists fill the score sheet based on the aspects assessed.

Data collection techniques in this research using documentation and questionnaire. Documentation used to collect data about the picture/photo research activities as physical evidence in this research. Questionnaire in question is using a hedonic test score sheet for the product. Sheet score sheet aims to collect data on aspects of dodol of aroma, color, texture and flavor. Organoleptic test result data about the quality of the product preferences expressed in a percentage perception expressed descriptively. This test was conducted to determine the level of A panelist on products with a certain percentage based on the classification of aroma, color, taste and texture.

Research Results

The description of the process of making dodol

The process of making dodol conducted in the laboratory of Family Welfare Education Faculty of Engineering, State University Makassar. Type of fruit used is mango, papaya, pineapple, while for vegetables is pumpkin and squash. This experiment activities conducted to obtain a standard prescription formula. The process of making dodol with the basic ingredients of fruits and vegetables include several stages:

Tools preparation

The tools used in the process of making dodol is:

- 1) Meat knife, is to cut the meat fruit and vegetables
- 2) Cutting board, a tool for cutting fruit and vegetable.
- 3) blender, is to destroy/soften the flesh of fruit and vegetable
- 4) mixing bowl, is a tool that serves as a batter.
- 5) steamer, tools for meat steaming pumpkin and squash
- 6) skillet, cook the dough dodol tool for fruits and vegetables
- 7) Spatula, a tool for stirring

Materials preparation

Materials used are: mango, pineapple, papaya, pumpkin, squash, sugar, flour, and water.

Processing

Stages of processing are:

- 1) Washing materials
- 2) Skinning, stripping the skin
- 3) Cutting/slice meat fruit and vegetables
- 4) Scale, weighing ingredients
- 5) Steaming, steaming process meat
- 6) Blending, the destruction of the flesh of fruits and vegetables to get a smoother texture into a dough.
- 7) Cooking or boiling
- 8) Chilling the dough dodol
- 9) Packing

After the cooling stage dodol dough, then cuts to taste and then wrapped in waxed paper. More details steps dodol can be seen in the following:

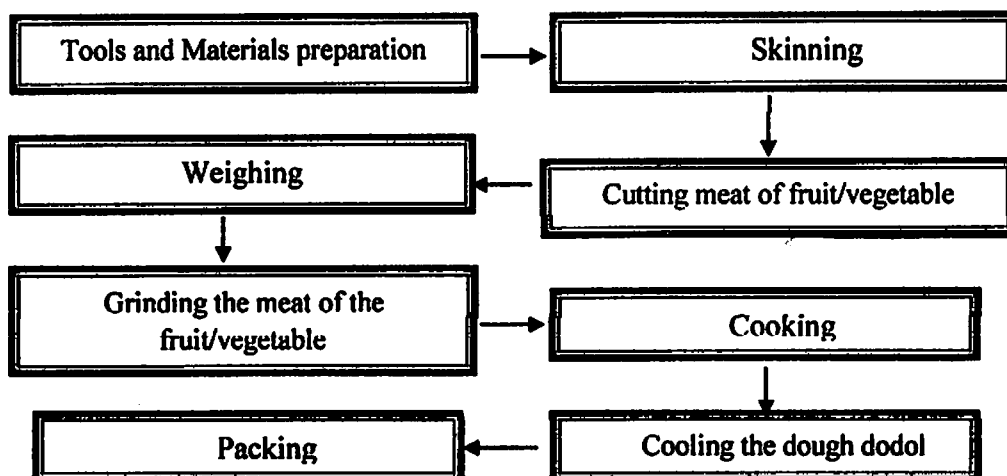


Figure 1. The process of making Dodol

The description of the Panelists Assessment of fruits and vegetables Dodol

After making dodol of fruit and vegetables carried out, the next will be held organoleptic assessment by panelists and the results of descriptive analysis related to frequency and percentage shown in Table 1:

Table 1. Percentage Frequency Distribution of hedonic test Score of the level of passions to Dodol on aspects of Aroma

Rating	Panelists	Percentage (100%)									
		F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
Very dislike	15	-	-	-	-	-	-	-	-	-	-
Dislike	15	7 (46,6)	-	4 (26,6)	-	4 (26,6)	-	7 (46,7)	-	4 (26,6)	-
A bit like	15	6 (40)	-	7 (46,6)	-	8 (53,3)	-	7 (46,7)	-	9 (60)	-
Moderate	15	2 (13,4)	-	4 (26,6)	-	3 (20)	-	1 (6,6)	-	2 (13,4)	-
less dislikes	15	-	7 (46,6)	-	5 (33,3)	-	5 (33,3)	-	3 (20)	-	3 (20)
Like	15	-	2 (13,4)	-	8 (53,3)	-	6 (40)	-	8 (53,3)	-	9 (60)
Very Like	15	-	6 (40)	-	2 (13,4)	-	4 (26,6)	-	4 (26,6)	-	3 (20)

Source: Data Processing, 2015

The data in Table 1 of dodol aroma of fruit and vegetables shows that products with the code of F1 in the category of very dislike there are no panelists who responded (0%). category dislike 7 people (46.6%), category a bit like 6 (40%), and category moderate 2 people (13.4%). F2 product code with less dislike category 7 (46.6%), categories like 2 (13.4%), very like 6 people (40%). F3 product code of 4 people (26.6%) dislike categories, the category a bit like 7 people (46.6%) and the category of moderate 4 people (26.6%). F4 products in the category of less dislike 5 people (33.3%), categories like 8 people (53.3%), very like 2 people (13.4%). F5 product 4 people (26.6%) in the category dislike, categories a bit like 8 people (53.3%), moderate category 3 people (20%). F6 products in the category of less dislike as much as 5 people (33.3%), categories like 6 people (40%), very like 4 people (26.6%). F7 product of 7 people (46.6%) in the category dislike. Categories a bit like 7 people (46.6%), moderate category 1 (6.6%). F8 product in the category of less dislike 3 people (20%), a category like 8 people (53.3%), very like 4 people (26.6%). Products F9 as many as 4 people (26.6%) in the category dislike. Categories a bit like 9 people (60%), moderate category 2 (13.4%). F10 products in the category of less dislike 3 people (20%), a category like 9 people (60%), very like 3 people (20%).

The results of organoleptic assessment by panelists on colors aspects of fruits and vegetables dodol by product code F1, F2, F3, F4, F5, F5, F6, F7, F8, F9, and F10 can be seen in Table 2:

Table 2. Percentage Frequency Distribution of hedonic test Score of the level of passions to Dodol on aspects of Colour

Rating	Panelists	Percentage (100%)									
		F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
Very dislike	15	-	-	-	-	-	-	-	-	-	-
dislike	15	9 (60)	-	5 (33,3)	-	7 (46,7)	-	6 (40)	-	4 (26,6)	-
A bit like	15	3 (20)	-	8 (53,3)	-	7 (46,7)	-	7 (46,7)	-	9 (60)	-
moderate	15	3 (20)	-	2 (13,4)	-	1 (6,6)	-	2 (13,4)	-	2 (13,4)	-
Less dislike	15	-	1 (6,6)	-	-	-	2 (13,4)	-	1 (6,6)	-	3 (20)
like	15	-	9 (60)	-	11 (73,4)	-	8 (53,3)	-	8 (53,3)	-	8 (53,3)
Very like	15	-	5 (33,3)	-	4 (26,6)	-	5 (33,3)	-	6 (40)	-	4 (26,6)

Source: Data Processing, 2015

Based on data about the color aspect of dodol in Table 2 indicate that the product with the code of F1 in the category of very dislike there are no panelists who responded (0%), category dislike 9 (60%), 3 people (20%) categories a bit like, moderate categories as many as 3 people (20%). Product code F2 category less dislike 1 (6.6%), a category like 9 people (60%), very like 5 people (33.3%). F3 product codes as many as 5 people (33.3%) dislike categories, the category a bit like 8 people (53.3%) and moderate category 2 (13.4%). F4 products in the category of a bit dislike no choice (0%), a category like 11 people (73.4%), very like 4 people (26.6%). F5 product 7 people (46.7%) in the category dislike. Categories a bit like 7 people (46.7%), moderate category 1 (6.6%). F6 products in the category of a bit dislike as much as 2 people (13.4%), categories like 8 people (53.3%), very like 5 people (33.3%). F7 product as many as 6 people (40%) in the category dislike, categories a bit like 7 people (46.6%), moderate category 2 people (13.4%). F8 product in the category of less dislike 1 (6.6%), a category like 8 people (53.3%), very like 6 people (40%). Products F9 as many as 4 people (26.6%) in the category dislike. Categories a bit like 9 people (60%), moderate category 2 people (13.4%). F10 products in the category of less dislike 3 people (20%), a category like 8 people (53.3%), very like 4 people (26.6%).

The results of organoleptic assessment by panelists on texture aspects of fruits and vegetables dodol by product code F1, F2, F3, F4, F5, F5, F6, F7, F8, F9, and F10 can be seen in Table 3:

Table 3. Percentage Frequency Distribution of hedonic test Score of the level of passions to Dodol on aspects of texture

Rating	Panelists	Percentage (100%)									
		F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
Very dislike	15	-	-	-	-	-	-	-	-	-	-
dislike	15	8 (53,3)	-	1 (6,6)	-	2 (13,3)	-	-	-	2 (13,3)	-
A bit like	15	7 (46,7)	-	12 (80)	-	9 (60)	-	10 (66,7)	-	10 (66,7)	-
moderate	15	-	-	2 (13,4)	-	4 (26,7)	-	5 (33,3)	-	3 (20)	-
Less dislike	15	-	4 (26,7)	-	2 (13,3)	-	2 (13,3)	-	4 (26,7)	-	3 (20)
like	15	-	6 (40)	-	7 (46,7)	-	8 (53,3)	-	7 (46,7)	-	5 (33,3)
Very like	15	-	5 (33,3)	-	6 (40)	-	5 (33,4)	-	4 (26,7)	-	7 (46,7)

Based on the data in Table 3 indicate that the product with code F1 in the category dislike as much as 8 people (53.3%), 7 people (46.7%) categories a bit like. Product code F2 category less dislike 4 people (26.7%), categories dislike 6 people (40%), very dislike 5 people (33.3%). F3 product code 1 (6.6%) dislike categories, the category a bit dislike 12 people (80%) and moderate category 2 people (13.4%). F4 products in the category less dislike 2 people (13.4%), categories dislike 7 people (46.6%), very dislike 6 people (40%). F5 product 2 people (13.4%) in the category dislike, categories less like 9 people (60%), moderate category 4 people (26.7%). F6 products in the category of less dislike as much as 2 people (13.4%), categories like 8 people (53.3%), very like 5 people (33.3%). F7 product category a bit like there were 10 people (66.7%), moderate category 5 (33.4%). F8 product in the category of less dislike 4 people (26.7%), categories like 7 people (46.6%), very like 4 people (26.7%). F9 product by 2 people (13.3%) in the category dislike. Categories a bit like 10 people (66.7%), moderate category 3 people (20%). F10 products in the category of less dislike 3 people (20%), a category like 5 people (33.3%), very like 7 people (46.7%).

The results of the analysis of frequency and percentage on taste aspect can be seen in Table 4 below:

Table 4. Percentage Frequency Distribution of hedonic test Score of the level of passions to Dodol on aspects of taste

Rating	Panelists	Percentage (100%)									
		F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
Very dislike	15	-	-	-	-	-	-	-	-	-	-
dislike	15	3 (20)	-	1 (6,6)	-	6 (40)	-	1 (6,6)	-	2 (13,4)	-
A bit like	15	9 (60)	-	12 (80)	-	7 (46,7)	-	9 (60)	-	9 (60)	-
moderate	15	3 (20)	-	2 (13,4)	-	2 (13,3)	-	5 (33,4)	-	4 (26,7)	-
Less dislike	15	-	1 (6,6)	-	-	-	2 (13,3)	-	2 (13,3)	-	1 (6,6)
like	15	-	8 (53,3)	-	11 (73,)	-	9 (60)	-	9 (60)	-	10 (66,7)
Very like	15	-	6 (40)	-	4 (26,7)	-	4 (26,7)	-	4 (26,7)	-	4 (26,7)

Source: Data Processing, 2015

Presentation of data on taste of dodol in Table 4 describes that of the 15 people who became panelist in this research, the products with the code of F1 in the category of very dislike there are no panelists who responded (0%). category dislike 3 people (20%), 9 (60%) categories a bit like, moderate categories as many as 3 people (20%). Product code F2 category less dislike 1 (6.6%), a category like 8 people (53.3%), very like 6 people (40%). F3 product code 1 (66.6%) dislike categories, the category a bit like 12 people (80%) and moderate category 2 people (13.4%). F4 products in the category of less dislike no choice (0%), a category like 11 people (73.4%), very like 4 people (26.7%). F5 products 6 people (40%) in the category dislike. Categories a bit like 7 people (46.7%), moderate category 2 people (13.4%). F6 products in the category of a bit dislike as much as 2 people (13.4%), categories like 9 people (60%), very like 4 people (26.7%). F7 products as much as 1 (6.6%) in the category dislike. Categories a bit like 9 people (60%), moderate category 5 (33.4%). F8 product in a category less dislike 2 people (13.4%), categories like 9 people (60%), very like 4 people (26.7%). F9 product by 2 people (13.4%) in the category dislike. Categories a bit like 9 (60.7%), moderate category 4 people (26.7%). F10 products in the category of less dislike 1 (6.6%), a category like 10 people (66.7%), very like 4 people (26.7%).

Discussion

Activities undertaken in this research is to dodol fruits and vegetables. Types of fruit used in making of dodol which is a type of mango, papaya, pineapple, while vegetables are pumpkins and squash. The reason for choosing the ingredients and vegetables as easily available in the market, the price is affordable, has the texture of meat that is easily processed into of dodol. so it will be easily manufactured and has economic value.

The processing of of dodol through several stages, from preparation of of materials and tools, cleaning, stripping the skin, cutting, weighing, crush and grind the meat fruit and vegetables, specifically for pumpkins and squashes carried steaming before the stage of refining the meat, then do the cooking of dodol dough with the addition of sugar and other ingredients or the recipe to get the dough dodol dull. The next stage is the process of cooling and cutting according to taste and the last is the packaging process.

Product code F1 is of dodol pumpkin with pumpkin dough substitution as much as 50%, product F2 is the substitute dough pumpkins as much as 25%. Product code F3 is of dodol squash the dough substitution as much as 50%. Product code F4

is to substitute dough squash as much as 25%. Product code F5 is of dodol papaya with the substitution of dough as much as 25%. Product code F6 is a dough product substitution papaya meat as much as 50%. Product code F7 is of dodol mango with dough substitution as much as 50%, product F8 is a substitute dough mango as much as 25%. Products with code F9 is of dodol pineapple with dough substitution as much as 50%, the product F10 is a substitute dough pineapple as much as 25%.

Processing of fruits and vegetables dodol do not have the same cooking method, it is because not all the meat fruits and vegetables have the same taste and texture. As for the type of pumpkin and squash have to go through the stage before the destruction process of steaming meat. This is done in order to facilitate the process of smoothing dough. Different to the type of fruit after the peel, be directly puree before cooking because the soft texture of the meat.

The results of organoleptic analysis of the preference level of the panelists to dodol fruit and vegetables shows that in the aspect of aroma generally panelists liked the product with code F2, F4, F6, F8, F9 and F10. Aspect colors, panelists were as many as 15 people preferred product code F2, F4, F6, F8, F9 and F10 color than other products. Aspects of assessment texture, all panelists preferred the product code F2, F4, F6, F8, and F9, while the product assessment about the taste in general the panelists preferred the product F2, F4, F6, F8, F9 and F10 compared to the product code F1, F3, F5 and F7. The description proves that the formula recipe 25% meat substitution of fruit and vegetables are preferred, except in papaya dodol 50% substitution is more preferred by the panelists.

Conclusion

Based on the formulation of the problem, the results of research and discussion, it can be concluded that:

The processing of dodol through several stages, from preparation of materials and tools, cleaning, stripping the skin, cutting, weighing, destruction/refining of meat fruit and vegetables, specifically for pumpkins and squash performed prior to the steaming meat smoothing stage, the next cooking dough dodol and then the cooling process and the last is the packaging process.

Recipe dodol on a substitution formula 25% of meat fruit and vegetables are preferred, except in papaya dodol with substitution 50% is more preferred by the panelists than substitution dough 25%.

The results of this research is to produce a standard prescription formula of making dodol by utilizing pumpkin, squash, papaya, mango and pineapple as a base material substitution dodol.

References

- Arifuddin Hamra, dkk. 2008. *Panduan Penjaminan Mutu Penelitian*. Makassar: Badan penerbit Universitas Negeri Makassar.
- Eti Sugiarti dan Nemi Sumarni. 2011. "Variasi Olahan Dodol Favorit". Penerbit: Dapur Koki Hoki
- Lies Subrapti, M. L. 2005. *Awetan kering dan dodol walu* yogyakarta. Kanisius
- Nurfadilla Syamsuddin. 2015. *Subtitusi Rumput Laut dan Sagu Terhadap Nugget Ayam Berkualitas*. Skripsi: Universitas Negeri Makassar.
- Rahmat. 2012. Studi Pembuatan Dari Rumput Laut. Skripsi Unhas.
- Rukmana, Rahmat. 1998. *Budi Daya Labu Siam*. Yogyakarta : Kanisius.
- Sanni. 2008. *Pembuatan Cake dari Labu Siam*. Tugas Akhir: Universitas Negeri Makassar.
- Suarno TS, 1985. *Penilaian Organoleptik*. Jakarta: Bharatara Karya Aksara.
- Sumoprastono. 2008. Memilih dan Menyimpan Sayur-Sayuran, Buah-Buahan dan Bahan Makanan. Bumi Aksara. Jakarta
- Suryati Sasuhu. 2008. "Membuat Aneka Dodol Buah Manis". Penerbit Swadaya Jakarta.
- Prihastuti Ekawatiningsih, dkk. 2008. *Restoran Jikid 3*. Direktorat Pembinaan Sekolah Menengah Kejuruan.
- Pujimulyani Dwiwati. 2009. Teknologi Pengolahan Sayur-Sayuran dan Buah-Buahan. Graha Ilmu. Yogyakarta.
- Oki Vindayanti. 2012. *Pemanfaatan Terung Ungu Dalam Pembuatan Dodol Yang Bermanfaat Sebagai Sumber Vitamin A*. Proyek Akhir: Universitas Negeri Yogyakarta.